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MOTOR FUELS AND THE METHODS OF
MAKING THEMVaman R. Kokatnur, New York, N. Y., assignor
to Autoxygen Inc., New York, N. Y., a corpo-
ration of New YorkNo Drawing. Application August 26, 1935,
Serial No. 37,944

2 Claims. (Cl. 44-9)

In order both to conserve the oil resources of the country and to provide a new outlet for farm products, the addition of alcohol to gasoline or other carhydro base for motor fuel purposes has been frequently suggested. Such a fuel while widely used in Europe has not found favor in America because of the following definite disadvantages (among others) over the use of straight gasoline.

Alcohol produces less power than gasoline, roughly only 65 to 75% of the power. It increases the temperature of the combustion chambers to an undesirable extent. If used in more than slight proportions it is prohibitively expensive. Furthermore, the use of alcohol in conjunction with hydro-carbon oils frequently necessitates reorganization of the engine structure and particularly redesign of the carburation mechanism.

Various fuels have also been proposed heretofore which consist of emulsions of water and gasoline or other hydro-carbon oils, these emulsions having usually been made by mixing the oil and water in the presence of an emulsifying or dispersing agent such as a metal soap, an alkali metal soap, or as suggested in my copending application Serial No. 37,943 filed Aug. 26, 1935, a compound alkali soap such as an ammonia soap or a soap made from an organic amino compound, such as a primary, secondary or tertiary amine.

A serious handicap in the commercialization of these emulsion types of combined oil and water fuels has been their extremely cloudy or milky appearance. The average motorist, used to purchasing a clear motor fuel, has very definite prejudices against introducing into the engine of his car, a cloudy-looking liquid.

An object of the present invention is to combine the advantages of the alcohol and carhydro mixtures with the advantages of the oil and water emulsions, eliminating the undesirable features of both types of fuel and at the same time producing a clear fuel which will permit higher compression ratios, eliminate the smoky exhaust which usually characterizes water emulsion fuels, increase the speed of the car, eliminate knocking, prevent the engine from carbonizing, give more mileage per gallon, greatly reduce the temperature in the combustion chamber, render engine performance smoother and increase the production of power.

In accordance with a preferred embodiment of the invention I add to a milky oil and water emulsion (such for instance as gasoline, water, and an emulsifying soap) a wood alcohol, grain

alcohol, acetone or ketone, aldehyde, ester, or some equivalent material which contains oxygen in its own molecular make-up. This clarifying material which acts as a mutual solvent for both oil and water not only helps to stabilize the emulsion and produce an absolutely transparent and clear fuel, but due to the oxygen in the added clarifying ingredient insures burning with a much less smoky flame. Furthermore, the addition of the alcohol, aldehydes, ether, acetone or ketone virtually inhibits knocking in an internal combustion engine.

In my copending application above referred to, I have disclosed a motor fuel consisting essentially of a hydro-carbon oil with which there is emulsified anywhere up to 50% by weight of water by the use of a compound alkali emulsifying agent used in small quantities, say 1 to 3%. The preferred agent is an ammonia soap or a soap formed from an organic amide ammonia compound. With this type of fuel the oil is in the continuous phase. However there are various other types of oil and water emulsions, some with oil in the continuous phase and some with water in the continuous phase which may be clarified in accordance with the present invention and which may be greatly improved by the teachings of the present invention.

It should be understood therefore that as the best emulsion from which the fuel is made, I wish to include any type of hydro-carbon oil and water emulsion with either water or oil in the continuous phase and regardless of whether such emulsion has been made with a metal soap such as magnesium, lead or a metal alkali soap such as that of soda and potash, or by a compound alkali soap such as discussed above.

Therefore the following example of one clear motor fuel made in accordance with the present invention is intended to be illustrative of many generally similar types of fuel.

To one gallon of gasoline I add, roughly, three to five parts of an emulsifying or dispersing agent such for instance as an amine compound soap. A suitable amount of water is then added slowly, the water being slowly added to prevent reversal of phase of the emulsion. As suggested above, water up to 50% may be added but this is reaching the dangerous limit where reversal of phase might be caused due to the presence of too much water and I preferably maintain the maximum water content somewhat below 50%. This produces a cloudy, milky emulsion. To this gallon I then add no more than an equal volume of an organic oxide. For purpose of the present ap-

plication I wish to define the term "organic oxide" as an organic compound of the type mentioned above, namely, an alcohol, acetone, ketone, ether or aldehyde, having no more than eight carbon atoms.

5 The addition of this organic oxide not only adds to the fuel value of the emulsion and not only increases the oxygen content of the emulsion, but completely clarifies the emulsion. A clarified fuel
10 emulsion prepared in accordance with the above disclosure may have its stability further enhanced if to the monohydric alcohol or other organic oxide, a very slight amount of polyhydric alcohol, notably glycol or glycerol is added. The
15 addition of merely traces of certain gums to the mixtures such as gum acacia, gum tragacanth, etc. also assists somewhat in stabilization, but these gums must be used in very minute quantities in order to avoid any possibility of fouling the
20 engine and must be very thoroughly dissolved in the emulsion.

Some of these emulsions before treatment with the alcohol or equivalent material are stable for a prolonged period of time. An emulsion formed in
25 accordance with the disclosure of my copending application is probably more stable than any other emulsion with which I am familiar, but the addition of the alcohol or equivalent material seems to have a remarkably stabilizing effect on them.

30 In order that the claims of this application may be thoroughly understood it is believed well to define the terms used in the claims. By the term "ammonium compound soap" I mean a soap comprising a compound of ammonia, or an organic
35 amino compound base and a soap forming fatty acid containing no less than six carbon atoms.

The term "alcohol" is to be construed as limited

to a mono-hydroxyl compound containing not more than six carbon atoms and having a boiling point not over 200° C.

By the term "carbhydro fuel" I mean a hydrocarbon saturated or unsaturated or cyclic compound capable of being used alone as a fuel for
5 internal combustion engines.

It will be seen from the foregoing description that a fuel oil made in accordance with this invention not only provides a very large outlet
10 for farm products in the form of alcohol, but overcomes the principal reason for public prejudice against water and oil emulsion type of fuel. Furthermore, the disadvantageous features of straight emulsion and alcohol mixtures as well as the
15 disadvantageous features of straight water and oil emulsion fuels are both eliminated while the beneficial and advantageous features of both types of fuel are combined and retained.

Having thus described my invention, what I
20 claim as new and desire to secure by Letters Patent is:—

1. A clear transparent motor fuel comprising at least 50% of carbhydro base capable of being used in internal combustion engines, at least 5%
25 water, a minimum of 5% monohydric alcohol of a boiling point not to exceed 200° C., and an ammonium compound soap in quantity sufficient to blend the minimum quantities of alcohol and water and the base fuel into a clear fuel.

2. A clear transparent blended motor fuel comprising at least 50% gasolene, at least 5% water,
30 at least 5% alcohol, and an ammonium compound soap in quantity sufficient to blend the gasolene, alcohol and water into a clear transparent fuel.
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